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LETTER OF TRANSMITTAL

Date: May 14, 2014 Project No: C1165-0302

To: Erica Bergman, NJDEP

From: Phil Goodrum, Integral

Re: Data Validation Report, March & April 2014 Groundwater Sampling

The following is enclosed: ☐ for your use ☐ for your files ☒ per your request

Quantity	Item
2	**Data Validation Report, March & April 2014 Groundwater Sampling**
2	**CD, including:** - **Data Validation Report** • **TestAmerica Laboratory Reports** • **EDDs (Including Summary Table 1)** - **PowerPoint slides presented at the May 7, 2014 meeting at NJDEP's offices** - **Raw and processed data files listing private potable well locations, including a summary of processing steps applied to datasets received from NJDEP and West Deptford**

Sent via:
☐ U.S. Mail
☐ Fax
☐ Other
☒ Federal Express
☐ Courier

cc: Mitch Gertz, Solvay Specialty Polymers USA, LLC
Nidal Azzam, U.S. Environmental Protection Agency
Andrew Park, U.S. Environmental Protection Agency
Chris Roe, Fox Rothschild LLP

ENVIRONMENTAL CONSULTING & MANAGEMENT
ROUX ASSOCIATES INC

402 Heron Drive
Logan Township, New Jersey 08085 TEL 856-423-8800 FAX 856-241-4670

May 14, 2014

Erica Bergman
NJDEP - Bureau of Case Management
401 E. State Street - Mail Code 401-05
P.O. Box 420
Trenton, NJ 08625-0420

Re: Groundwater Monitoring Data and May 7, 2014 Presentation Material
Solvay West Deptford Plant
10 Leonard Lane
West Deptford, NJ 08086-2150

Dear Ms. Bergman:

As the Licensed Site Remediation Professional (LSRP) retained by Solvay Specialty Polymers USA, LLC (Solvay), I have reviewed the following materials and I am submitting them for your review and distribution within NJDEP:

1. Electronic Data Delivery (EDD) of PFC concentrations measured in samples collected in March and April 2014 from Solvay's groundwater monitoring wells located onsite and offsite;
2. Laboratory data reports for chemical analysis of groundwater samples (electronic files prepared by TestAmerica Laboratories, Inc.);
3. Data validation report prepared by Integral Consulting;
4. Power point slides (PDF copy) presented at the May 7, 2014 meeting at NJDEP's offices; and
5. Raw and processed data files listing private potable well locations, including a summary of processing steps applied to datasets received from NJDEP and West Deptford.

Please feel free to contact Mitch Gertz with any questions.

Sincerely,

Thomas R. Buggey, LSRP #580659
Principal Hydrogeologist

cc: Nidal Azzam, U.S. Environmental Protection Agency
Andrew Park, U.S. Environmental Protection Agency
Mitch Gertz, Solvay Specialty Polymers
Phil Goodrum, Integral Consulting Inc.

integral consulting inc.

DATA VALIDATION REPORT

March & April 2014 Groundwater Sampling

Prepared for
Solvay Specialty Polymers USA, LLC
10 Leonard Lane
West Deptford, NJ 08086

Prepared by
Integral Consulting Inc.
200 Harry S. Truman Parkway
Suite 330
Annapolis, MD 21401

May 14, 2014

DATA VALIDATION REPORT

March & April 2014 Groundwater Sampling

Prepared for
Solvay Specialty Polymers USA, LLC
10 Leonard Lane
West Deptford, NJ 08086

Prepared by

200 Harry S. Truman Parkway
Suite 330
Annapolis, MD 21401

May 14, 2014

1 INTRODUCTION

This report summarizes the findings of the Stage 2B data validation of the groundwater samples collected from March 11 to March 21, 2014, and April 17 and 18, 2014. The samples were analyzed for perfluoroalkyl compounds (PFCs) by TestAmerica Denver, of Arvada, Colorado by method DV-LC-0012.

Data were reported in sample delivery groups (SDGs) 460-72379-1, 460-72594-1, 460-72595-1, 460-72654-1, 460-72715-1, 460-72785-1, 460-72976-1, 460-73060-1, 460-73202-1, 460-74613-1, and 460-74665-1.

2 DATA VALIDATION

The samples received a Stage 2B validation, which included a review of all laboratory summary forms of quality control and instrument performance data. The data validation was based upon criteria described in *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (USEPA 2008) and laboratory-established quality control acceptance limits.

Qualifiers resulting from the validation process were entered into the project database. A reason code indicating the reason for qualification was also entered into the database. The definitions of the data qualifiers are provided in Table 1 and descriptions of the reason codes are provided in Table 2. For example, if a data point was estimated due to an internal standard recovery outlier, the qualifier "UJ" and the reason code "IS" would be entered into the database, indicated as UJ – IS in the discussion of findings.

The quality assurance and quality control (QA/QC) parameters reviewed are listed below.

2.1 SAMPLE RECEIPT AND HOLDING TIMES

Samples were received with complete chain-of-custody forms and in good condition with exceptions noted below.

Trip blanks were received for SDGs 460-72379-1, 460-72595-1, 460-72654-1, 460-72715-1, 460-72785-1, and 460-72976-1 but they were not listed on the associated chain-of-custody forms. These trip blanks were logged in and analyzed by the laboratory.

SDG 460-72785-1: The laboratory did not record the sample receipt temperature but indicated samples were received on ice and in good condition. No qualifiers were assigned.

All samples were extracted and analyzed within the holding times specified in the analytical method. The laboratory case narratives for SDGs 460-72379-1 and 460-72595-1 indicate the trip blanks were extracted outside of the 7 day holding time. However, all trip blanks were analyzed within 7 days of the collection date of the associated field samples and therefore the extractions should be considered to have occurred within holding times.

2.2 BLANKS

All results from the laboratory blanks, decontamination blanks, equipment blanks, field blanks, and trip blanks were reported as less than the method detection limit (MDL), with the exceptions noted below.

SDG 460-72379-1 and 460-72594-1: Perfluorooctanoate acid (PFOA) was detected in the March 18, 2014 laboratory blank, preparation batch 280-217223. PFOA was reported at a concentration less than 3 times the laboratory blank concentration in GW0018 and the result was qualified as not detected (U-MB). PFOA was not detected or was greater than 3 times the laboratory blank concentration in all other associated samples and no qualifiers were assigned.

SDGs 460-72595-1, 460-72654-1, 460-72715-1, and 460-72785-1: Perfluorononanonoic acid (PFNA) was detected in the March 20, 2014 laboratory blank, preparation batch 280-217537. PFNA was not detected or was greater than 3 times the laboratory blank concentration in all associated samples and no qualifiers were assigned.

SDG 460-72976-1: Detections for PFOA, PFNA, perfluorodecanoic acid (PFDA), and perfluoroundecanoic acid (PFUnDA) were reported in field blank FB0007.

- PFOA, PFDA, and PFUnDA were reported at concentrations less than 3 times the field blank concentration in GW0044 and the results were qualified as not detected (U-FB)
- PFNA was reported at concentrations less than 3 times the field blank concentration in GW0040, GW0041, GW0042, GW0043, GW0044, GW0061, GW0062, and GW0063 and the results were qualified as not detected (U-FB).

2.3 SURROGATES

Surrogate compounds were added to all samples and all surrogate recoveries were within laboratory acceptance limits, with the exceptions noted below. A surrogate recovery outside of the laboratory control limits may indicate a potential bias in the analytical results; however, surrogate recoveries from analyses diluted 5 or greater do not provide an accurate representation of analytical accuracy.

SDG 460-72379-1: The recovery of 13C8-perfluorooctane sulfonate (13C8-PFOS) in GW0002 was greater than the upper control limit of 130 percent, at 132 percent. The detected results in this sample were estimated (J-SSR). Additionally, the 13C8-PFOS recoveries in the dilution analyses (50X and 100X) of GW0002 were greater than the upper control limit; no qualifiers were assigned.

SDG 460-72595-1: The 13C8-PFOS recoveries in some dilution analyses greater than 5X were greater than the upper control limit; no qualifiers were assigned.

SDG 460-73202-1: The 13C8-PFOS recoveries in the batch QC matrix spike/matrix spike duplicate (MS/MSD) analyses were greater than the upper control limit of 130 percent, at 369 percent and 386 percent, respectively. The batch QC sample is not related to the project samples and no qualifiers were assigned.

SDG 460-74613-1: The recovery of 13C8-PFOS in the dilution analysis (20X) of GW008 was greater than the upper control limit; no qualifiers were assigned.

2.4 LABORATORY CONTROL SAMPLES/LABORATORY CONTROL SAMPLE DUPLICATES

Laboratory control samples (LCSs) were analyzed with each batch. Laboratory control sample duplicates (LCSDs) were analyzed with batches that did not contain a MS/MSD. All LCS/LCSD recoveries and relative percent difference (RPD)[1] values were within laboratory acceptance limits, with the exceptions noted below. A recovery or RPD outside of the laboratory control limits may indicate a potential bias in the analytical results.

SDGs 460-72379-1 and 460-72594-1: The RPD for perfluorotetradecanoic acid (PFTeDA) in March 18, 2014 LCS/LCSD was greater than the upper control limit of 30 percent, at 42 percent. PFTeDA was not detected in the associated samples and no qualifiers were assigned.

2.5 MATRIX SPIKE/MATRIX SPIKE DUPLICATES

MS/MSDs were performed on samples GW0029, GW0041, and GW0062. All MS/MSD recoveries and RPD values were within laboratory acceptance limits, with the exceptions noted below. A recovery or RPD outside of the laboratory control limits may indicate a potential bias in the analytical results.

SDGs 460-72595-1, 460-72654-1, 460-72715-1, and 460-72785: Recoveries of PFNA and PFUnDA were outside the laboratory control limits in the MS/MSD performed on sample GW0029. The detected PFUnDA result in sample GW0029 was estimated (J-MS). The concentration of PFNA in sample GW0029 was greater than 4 times the amount spiked and, therefore, the recoveries do not provide an accurate representation of analytical accuracy; no qualifiers were assigned. All RPDs met laboratory control limits.

SDG 460-72976-1: Recoveries of PFOA, PFDA, PFNA, and PFUnDA were outside the control limits in the MS/MSD performed on sample GW0041:

- The PFOA result was estimated (J-MS).
- The percent recovery of PFDA was less than the lower control limit in the MSD. No qualifiers were assigned as the percent recovery in the MS was within the control limits and the percent recovery in the MSD was within 10 percent of the upper control limit.
- The concentration of PFNA in sample GW0041 was greater than 4 times the amount spiked, and no qualifiers were assigned.

[1] RPD equals the range divided by the arithmetic mean.

- The percent recovery of PFUnDA was less than the lower control limit in the MS. No qualifiers were assigned as the percent recovery in the MSD was within the control limits and the percent recovery in the MS was within 10 percent of the upper control limit.
- All RPDs met laboratory control limits.

Recoveries of PFOA, PFNA, and PFUnDA were outside the control limits in the MS/MSD performed on GW0062, and the RPD of PFTeDA was greater than the control limit:

- The PFOA result was estimated (J-MS).
- The concentration of PFNA in sample GW0062 was greater than 4 times the amount spiked, and no qualifiers were assigned.
- The percent recovery of PFUnDA was less than the lower control limit in the MS. No qualifiers were assigned as the percent recovery in the MSD was within the control limits and the percent recovery in the MS was within 10 percent of the upper control limit.
- PFTeDA was not detected in sample GW0062 and no qualifiers were assigned because of the potential imprecision.

SDG 460-73202-1: Recoveries of PFDA and PFDoDA were less than the lower control limits in the MSD performed on the batch QC sample, and the recovery of PFNA was greater than the control limit. Additionally, the RPDs of PFDA, PFDoDA, and PFNA were greater than the control limit. The batch QC sample is not related to the project samples and no qualifiers were assigned.

SDG 460-74665-1: Recoveries of PFTeDA were greater than the upper control limit in the MS/MSD performed on GW0003. PFTeDA was not detected in the associated sample and no qualifiers were assigned.

2.6 SAMPLE RESULTS

Several samples required dilution due to the presence of high levels of target analytes. As noted in the case narratives, elevated reporting limits are not provided due to system limitations for isotope dilution methods.

SDG 460-72379-1: The PFNA concentration in sample GW0002 was over the linear range of the calibration. This result was from a 100X dilution, the sample could not be diluted further as the internal standards would not be recovered. The PFNA result in sample GW0002 was estimated (J-UC).

2.7 FIELD REPLICATES

Five sets of field replicates were reported, GW0001 & GW0002 (SDG 460-74665-1), GW0007 & GW0008 (SDG 460-74613-1), GW0020 & GW0021 (SDG 460-72379-1), GW0041 & GW0042 (SDG 460-72976-1), and GW0062 & GW0063 (SDG 460-72976-1). The U.S. Environmental Protection Agency (EPA) has not established control limits for field replicates. For this project, the target control limit for field replicates is an RPD less than 35 percent for values greater than 5 times the MRL. For values less than 5 times the MRL, the absolute difference should be less than the MRL. Data were not qualified if the measurement quality objectives were exceeded. These control limits were met for all analytes with the exceptions noted below.

SDG 460-74613-1: The values for PFUnDA were less than 5 times the MRL and the difference between the results in field duplicates GW0007 & GW0008 was greater than the MRL.

2.8 DETECTION LIMIT STANDARDS

All detection limit standards met the laboratory limits.

2.9 INSTRUMENT CALIBRATION

All initial and continuing calibrations met the laboratory limits, with the exceptions noted below.

SDG 460-72379-1, 460-72594-1, and 460-72595-1: The percent difference for PFTeDA was less than the lower control limit of -30 percent in three continuing calibrations associated with dilution analyses (280-218049/3, 280-218049/15, 280-218049/26). PFTeDA was not reported from the associated dilution analyses and no qualifiers were assigned.

2.10 INTERNAL STANDARDS

Internal standards were added to all samples, and the areas and retention times of all internal standards were within the laboratory control limits, with the exceptions noted below. When dilution analyses are performed the laboratory does not add additional internal standard and only the retention time is evaluated for dilution analyses. Qualifiers for internal standard area outliers are not to results reported from dilution analyses.

The samples listed below had internal standard areas below the laboratory control limit in the initial analyses. All internal standard retention times met the laboratory control limits. An internal standard area outside of the laboratory control limits may indicate a potential bias in the analytical results.

SDG 460-72379-1:

- GW0002: 13C4-perfluorooctanoate acid (13C4-PFOA), 13C4-perfluorooctanesulfonic acid (13C4-PFOS), 13C5-perfluorononanoic acid (13C5-PFNA), 13C2-perfluorodecanoic acid (13C2-PFDA), 13C2-perfluoroundecanoic acid (13C2-PFUnDA), 13C2-perfluorododecanoic acid (13C2-PFDoDA). The PFOS, PFDoDA, and PFTeDA results were estimated (J/UJ-ISP).
- GW0006: 13C5-PFNA, 13C2-PFDA. The PFDA result was estimated (J-ISP).
- GW0020: 13C4-PFOS, 13C5-PFNA, 13C2-PFDA, 13C2-PFDoDA. The PFOS, PFDA, PFDoDA, PFTrDA, and PFTeDA results were estimated (UJ-ISP).
- GW0022: 13C2-PFDA. The PFDA result was estimated (J-ISP).
- GW0033: 13C2-PFUnDA, 13C2-PFDoDA. The PFUnDA, PFDoDA, PFTrDA, and PFTeDA results were estimated (J/UJ-ISP).
- FB0001: 13C2-PFDoDA. The PFDoDA, PFTrDA, and PFTeDA results were estimated (UJ-ISP).

SDG 460-72594-1:

- GW0008: 13C4-PFOS, 13C5-PFNA, 13C2-PFDA, 13C2-PFUnDA. The PFOS, PFDA, and PFUnDA results were estimated (J/UJ-ISP).
- GW0011: 13C2-PFDA. The PFDA result was estimated (UJ-ISP).
- GW0012: 13C5-PFNA
- GW0024: 13C4-PFOA, 13C4-PFOS, 13C5-PFNA. The PFOS result was estimated (UJ-ISP).
- GW0045: 13C2-PFDA, 13C2-PFUnDA. The PFDA and PFUnDA results were estimated (J/UJ-ISP).
- GW0047: 13C4-PFOS, 13C5-PFNA, 13C2-PFDA, 13C2-PFUnDA. The PFOS, PFDA, and PFUnDA results were estimated (J-ISP).
- DW0001: 13C2-PFUnDA, 13C2-PFDoDA. The PFUnDA, PFDoDA, PFTrDA, and PFTeDA results were estimated (UJ-ISP).

SDG 460-72595-1:

- GW0001: 13C4-PFOS, 13C5-PFNA, 13C2-PFDA, 13C2-PFUnDA. The PFOS, PFDA, and PFUnDA results were estimated (J-ISP).
- GW0004: 13C4-PFOS, 13C5-PFNA. The PFOS result was estimated (J-ISP).
- GW0009: 13C4-PFOA, 13C4-PFOS, 13C5-PFNA. The PFOS result was estimated (J-ISP).

- GW0014: 13C2-PFDA, 13C2-PFUnDA. The PFDA and PFUnDA results were estimated (J-ISP).
- GW0017: 13C4-PFOS, 13C5-PFNA, 13C2-PFDA, 13C2-PFUnDA, 13C2-PFDoDA. All results, except PFOA results, estimated (J/UJ-ISP).
- GW0027: 13C4-PFOA, 13C4-PFOS, 13C5-PFNA. The PFOS result was estimated (UJ-ISP).
- GW0031: 13C5-PFNA.
- GW0032: 13C4-PFOS, 13C5-PFNA, 13C2-PFUnDA. The PFOS result was estimated (UJ-ISP).

SDG 460-72654-1:

- GW0028: 13C4-PFOA, 13C4-PFOS, 13C5-PFNA. The PFOA and PFOS results were estimated (J/UJ-ISP).

SDG 460-72715-1:

- GW0049: 13C5-PFNA.
- GW0054: 13C5-PFNA.

SDG 460-72785-1:

- GW0056: 13C4-PFOA, 13C4-PFOS. The PFOS result was estimated (UJ-ISP).
- GW0057: 13C4-PFOA, 13C4-PFOS, 13C5-PFNA. The PFOS result was estimated (UJ-ISP).

SDG 460-72976-1:

- GW0041: 13C4-PFOS, 13C5-PFNA. The PFOS result was estimated (J-ISP).
- GW0042: 13C4-PFOS, 13C5-PFNA, 13C2-PFDA. The PFOS and PFDA results were estimated (J/UJ-ISP).
- GW0043: 13C5-PFNA.
- GW0044: 13C2-PFDA, 13C2-PFUnDA. The PFDA and PFUnDA results were estimated (J/UJ-ISP).
- GW0063: 13C4-PFOS. The PFOS result was estimated (J-ISP).

SDG 460-73060-1:

- GW0035: 13C4-PFOA, 13C5-PFNA.

- GW0037: 13C4-PFOS, 13C5-PFNA, 13C2-PFDA, 13C2-PFUnDA. The PFOS, PFDA, and PFUnDA results were estimated (J-ISP).
- GW0038: 13C4-PFOS, 13C5-PFNA. The PFOS result was estimated (UJ-ISP).
- FB0008: 13C2-PFDoDA. The PFDoDA, PFTeDA, and PFTrDA results were estimated (UJ-ISP).

SDG 460-73202-1:

- Bottle Blank: 13C5-PFNA. The PNFA result was estimated (UJ-ISP).
- DI Water Blank: 13C5-PFNA, 13C2-PFDA. The PFNA and PFDA results were estimated (UJ-ISP).

SDG 460-74613-1:

- GW0009: 13C4-PFOS, 13C5-PFNA, 13C2-PFDA, 13C2-PFUnDA. The PFOS, PFNA, PFDA, and PFUnDA results were estimated (J/UJ-ISP).
- GW0007: 13C4-PFOS, 13C5-PFNA. The PFOS result was estimated (UJ-ISP).
- GW0008: 13C4-PFOS, 13C5-PFNA. The PFOS result was estimated (UJ-ISP).
- GW0011: 13C2-PFDA. The PFDA result was estimated (J-ISP).
- GW0012: 13C4-PFOS. The PFOS result was estimated (UJ-ISP).
- GW0013: 13C4-PFOS, 13C5-PFNA. The PFOS result was estimated (UJ-ISP).
- EQ0002: 13C2-PFDA. The PFDA result was estimated (UJ-ISP).

3 ASSESSMENT

The data meet the criteria outlined above, with the noted exceptions. Data were qualified for blank contamination, a linear calibration range exceedance, and surrogate, MS/MSD, and internal standard recoveries. No data were rejected and completeness was 100 percent. All results are usable for their intended purpose. A summary of all qualified results is presented in Table 3.

4 REFERENCES

USEPA. 2008. Contract Laboratory Program national functional guidelines for superfund organic methods data review. EPA-540-R-08-01. U.S. Environmental Protection Agency, Office of Superfund Remediation and Technology, Washington, DC. June.

Table 1. Definition of Data Qualifiers

Data Qualifier	Definition
J	The associated numerical value is an estimated quantity.
N	Presumptive evidence of the presence of the material.
NJ	Presumptive evidence of the presence of the material at an estimated quantity.
R	Rejected.
T	The associated numerical value was mathematically derived (e.g., from summing multiple analyte results such as Aroclors, or calculating the average of multiple results for a single analyte. Also indicates all results that are selected for reporting in preference to other available results (e.g., for parameters reported by multiple methods).
U	The material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.
UJ	Estimated and not detected. The analyte is considered not detected at the reported value, and the associated numerical value is an estimated value.

Table 2. Definition of Data Validation Reason Codes

Reason Code	Definition
%Moi	Percent moisture
BD	Breakdown
Cc	Calibration (continuing)
Chrom	Chromatographic pattern in sample does not match pattern of calibration standard
Ci	Calibration (initial)
CONF	Compound confirmation
CRDL	Contract required detection limit (CRDL) standard
EMPC	Estimated maximum possible concentration
HT	Holding time/sample preservation
IAR	Ion abundance ratio
ICPSD	ICP serial dilution percent difference
ICS	ICP interference check standard recovery
ISP	Internal standard performance (e.g., area, retention time, recovery)
LB	Lab blank contamination (e.g., method blank, instrument, etc.)
LCS	Laboratory control sample recoveries
Mi	Matrix interference
MS	Matrix spike (MS & MSD) recoveries
Other	Other (define in validation report)
PFP	Potential false positives
REP	Precision (all replicates)
SSR	Surrogate spike recoveries (a.k.a., labeled compounds and recovery standards)
TB	Trip blank contamination
FB	Field, equipment, rinsate blank contamination
UC	Upper calibration range exceeded

Table 3. Summary of Qualified Data

SDG	Laboratory ID	Sample	Analyte	Result	Method Reporting Limit	Lab Qualifier	DV Qualifier	DV Qualifier Reason	Units
460-73202-1	460-73202-1	Bottle Blank	Perfluorononanoic acid	0.017	0.038	U	UJ	ISP	µg/L
460-73202-1	460-73202-2	DI Water Blank	Perfluorodecanoic acid	0.0073	0.019	U	UJ	ISP	µg/L
460-73202-1	460-73202-2	DI Water Blank	Perfluorononanoic acid	0.016	0.037	U	UJ	ISP	µg/L
460-72594-1	460-72594-15	DW0001	Perfluorododecanoic acid	0.014	0.027	U	UJ	ISP	µg/L
460-72594-1	460-72594-15	DW0001	Perfluorotetradecanoic acid	0.013	0.027	U	UJ	ISP	µg/L
460-72594-1	460-72594-15	DW0001	Perfluorotridecanoic acid	0.016	0.036	U	UJ	ISP	µg/L
460-72594-1	460-72594-15	DW0001	Perfluoroundecanoic acid	0.0063	0.018	U	UJ	ISP	µg/L
460-74613-1	460-74613-4	EQ0002	Perfluorodecanoic acid	0.0075	0.019	U	UJ	ISP	µg/L
460-72379-1	460-72379-3	FB0001	Perfluorododecanoic acid	0.014	0.028	U	UJ	ISP	µg/L
460-72379-1	460-72379-3	FB0001	Perfluorotetradecanoic acid	0.014	0.028	U	UJ	ISP	µg/L
460-72379-1	460-72379-3	FB0001	Perfluorotridecanoic acid	0.016	0.037	U	UJ	ISP	µg/L
460-73060-1	460-73060-1	FB0008	Perfluorododecanoic acid	0.015	0.03	U	UJ	ISP	µg/L
460-73060-1	460-73060-1	FB0008	Perfluorotetradecanoic acid	0.015	0.03	U	UJ	ISP	µg/L
460-73060-1	460-73060-1	FB0008	Perfluorotridecanoic acid	0.018	0.04	U	UJ	ISP	µg/L
460-72595-1	460-72595-12	GW0001	Perfluorodecanoic acid	0.013	0.018	J	J	ISP	µg/L
460-72595-1	460-72595-12	GW0001	Perfluorooctanesulfonic acid	0.036	0.028		J	ISP	µg/L
460-72595-1	460-72595-12	GW0001	Perfluoroundecanoic acid	0.029	0.018		J	ISP	µg/L
460-72379-1	460-72379-1	GW0002	Perfluorodecanoic acid	3.63	0.018		J	SSR	µg/L
460-72379-1	460-72379-1	GW0002	Perfluorododecanoic acid	0.072	0.027		J	SSR,ISP	µg/L
460-72379-1	460-72379-1	GW0002	Perfluorononanoic acid	482	0.036		J	UC,SSR	µg/L
460-72379-1	460-72379-1	GW0002	Perfluorooctanesulfonic acid	0.043	0.027		J	SSR,ISP	µg/L
460-72379-1	460-72379-1	GW0002	Perfluorooctanoic acid	16.2	0.018		J	SSR	µg/L
460-72379-1	460-72379-1	GW0002	Perfluorotetradecanoic acid	0.013	0.027	U	UJ	ISP	µg/L
460-72379-1	460-72379-1	GW0002	Perfluorotridecanoic acid	0.12	0.036		J	SSR	µg/L
460-72379-1	460-72379-1	GW0002	Perfluoroundecanoic acid	8.82	0.018		J	SSR	µg/L
460-72595-1	460-72595-13	GW0004	Perfluorooctanesulfonic acid	0.026	0.028	J	J	ISP	µg/L
460-72379-1	460-72379-4	GW0006	Perfluorodecanoic acid	0.36	0.019		J	ISP	µg/L
460-74613-1	460-74613-7	GW0007	Perfluorooctanesulfonic acid	0.013	0.029	U	UJ	ISP	µg/L
460-72594-1	460-72594-11	GW0008	Perfluorodecanoic acid	0.23	0.018		J	ISP	µg/L
460-72594-1	460-72594-11	GW0008	Perfluorooctanesulfonic acid	0.012	0.026	U	UJ	ISP	µg/L
460-74613-1	460-74613-8	GW0008	Perfluorooctanesulfonic acid	0.012	0.028	U	UJ	ISP	µg/L
460-72594-1	460-72594-11	GW0008	Perfluoroundecanoic acid	0.12	0.018		J	ISP	µg/L
460-74613-1	460-74613-6	GW0009	Perfluorodecanoic acid	0.0073	0.019	U	UJ	ISP	µg/L
460-74613-1	460-74613-6	GW0009	Perfluorononanoic acid	1.37	0.038		J	ISP	µg/L
460-72595-1	460-72595-6	GW0009	Perfluorooctanesulfonic acid	0.012	0.027	U	UJ	ISP	µg/L
460-74613-1	460-74613-6	GW0009	Perfluorooctanesulfonic acid	0.035	0.028		J	ISP	µg/L
460-74613-1	460-74613-6	GW0009	Perfluoroundecanoic acid	0.0065	0.019	U	UJ	ISP	µg/L
460-72594-1	460-72594-2	GW0011	Perfluorodecanoic acid	0.0069	0.018	U	UJ	ISP	µg/L
460-74613-1	460-74613-9	GW0011	Perfluorodecanoic acid	0.0094	0.019	J	J	ISP	µg/L
460-74613-1	460-74613-10	GW0012	Perfluorooctanesulfonic acid	0.012	0.027	U	UJ	ISP	µg/L
460-74613-1	460-74613-11	GW0013	Perfluorooctanesulfonic acid	0.012	0.027	U	UJ	ISP	µg/L
460-72595-1	460-72595-3	GW0014	Perfluorodecanoic acid	0.18	0.018		J	ISP	µg/L
460-72595-1	460-72595-3	GW0014	Perfluoroundecanoic acid	0.24	0.018		J	ISP	µg/L
460-72595-1	460-72595-9	GW0017	Perfluorodecanoic acid	0.0096	0.023	J	J	ISP	µg/L
460-72595-1	460-72595-9	GW0017	Perfluorododecanoic acid	0.017	0.034	U	UJ	ISP	µg/L
460-72595-1	460-72595-9	GW0017	Perfluorononanoic acid	1.63	0.045		J	ISP	µg/L
460-72595-1	460-72595-9	GW0017	Perfluorooctanesulfonic acid	0.019	0.034	J	J	ISP	µg/L
460-72595-1	460-72595-9	GW0017	Perfluorotetradecanoic acid	0.017	0.034	U	UJ	ISP	µg/L
460-72595-1	460-72595-9	GW0017	Perfluorotridecanoic acid	0.02	0.045	U	UJ	ISP	µg/L
460-72595-1	460-72595-9	GW0017	Perfluoroundecanoic acid	0.038	0.023		J	ISP	µg/L
460-72594-1	460-72594-3	GW0018	Perfluorooctanoic acid	0.017	0.019	J B	U	MB	µg/L
460-72379-1	460-72379-8	GW0020	Perfluorodecanoic acid	0.017	0.018	J	J	ISP	µg/L
460-72379-1	460-72379-8	GW0020	Perfluorododecanoic acid	0.014	0.028	U	UJ	ISP	µg/L
460-72379-1	460-72379-8	GW0020	Perfluorooctanesulfonic acid	0.051	0.028		J	ISP	µg/L

Table 3. Summary of Qualified Data

SDG	Laboratory ID	Sample	Analyte	Result	Method Reporting Limit	Lab Qualifier	DV Qualifier	DV Qualifier Reason	Units
460-72379-1	460-72379-8	GW0020	Perfluorotetradecanoic acid	0.014	0.028	U	UJ	ISP	µg/L
460-72379-1	460-72379-8	GW0020	Perfluorotridecanoic acid	0.016	0.037	U	UJ	ISP	µg/L
460-72379-1	460-72379-7	GW0022	Perfluorodecanoic acid	0.038	0.019		J	ISP	µg/L
460-72594-1	460-72594-7	GW0024	Perfluorooctanesulfonic acid	0.013	0.029	U	UJ	ISP	µg/L
460-72595-1	460-72595-15	GW0027	Perfluorooctanesulfonic acid	0.012	0.027	U	UJ	ISP	µg/L
460-72654-1	460-72654-2	GW0028	Perfluorooctanesulfonic acid	0.013	0.028	U	UJ	ISP	µg/L
460-72654-1	460-72654-2	GW0028	Perfluorooctanoic acid	1.4	0.019		J	ISP	µg/L
460-72595-1	460-72595-10	GW0029	Perfluoroundecanoic acid	0.16	0.019		J	MS	µg/L
460-72595-1	460-72595-14	GW0032	Perfluorooctanesulfonic acid	0.012	0.027	U	UJ	ISP	µg/L
460-72379-1	460-72379-5	GW0033	Perfluorododecanoic acid	0.014	0.027	U	UJ	ISP	µg/L
460-72379-1	460-72379-5	GW0033	Perfluorotetradecanoic acid	0.013	0.027	U	UJ	ISP	µg/L
460-72379-1	460-72379-5	GW0033	Perfluorotridecanoic acid	0.016	0.036	U	UJ	ISP	µg/L
460-72379-1	460-72379-5	GW0033	Perfluoroundecanoic acid	0.074	0.018		J	ISP	µg/L
460-73060-1	460-73060-2	GW0037	Perfluorodecanoic acid	0.13	0.021		J	ISP	µg/L
460-73060-1	460-73060-2	GW0037	Perfluorooctanesulfonic acid	0.021	0.031	J	J	ISP	µg/L
460-73060-1	460-73060-2	GW0037	Perfluoroundecanoic acid	0.24	0.021		J	ISP	µg/L
460-73060-1	460-73060-3	GW0038	Perfluorooctanesulfonic acid	0.013	0.028	U	UJ	ISP	µg/L
460-72976-1	460-72976-9	GW0040	Perfluorononanoic acid	1.63	0.037		U	FB	µg/L
460-72976-1	460-72976-2	GW0041	Perfluorononanoic acid	11.6	0.037	D	U	FB	µg/L
460-72976-1	460-72976-2	GW0041	Perfluorooctanesulfonic acid	0.016	0.027	J	J	ISP	µg/L
460-72976-1	460-72976-2	GW0041	Perfluorooctanoic acid	0.3	0.018		J	MS	µg/L
460-72976-1	460-72976-3	GW0042	Perfluorodecanoic acid	0.055	0.02		J	ISP	µg/L
460-72976-1	460-72976-3	GW0042	Perfluorononanoic acid	12.8	0.04	D	U	FB	µg/L
460-72976-1	460-72976-3	GW0042	Perfluorooctanesulfonic acid	0.013	0.03	U	UJ	ISP	µg/L
460-72976-1	460-72976-4	GW0043	Perfluorononanoic acid	8.38	0.041	D	U	FB	µg/L
460-72976-1	460-72976-1	GW0044	Perfluorodecanoic acid	0.013	0.018	J	UJ	FB,ISP	µg/L
460-72976-1	460-72976-1	GW0044	Perfluorononanoic acid	1.78	0.035		U	FB	µg/L
460-72976-1	460-72976-1	GW0044	Perfluorooctanoic acid	0.2	0.018		U	FB	µg/L
460-72976-1	460-72976-1	GW0044	Perfluoroundecanoic acid	0.037	0.018		UJ	FB,ISP	µg/L
460-72594-1	460-72594-5	GW0045	Perfluorodecanoic acid	0.016	0.018	J	J	ISP	µg/L
460-72594-1	460-72594-5	GW0045	Perfluoroundecanoic acid	0.0064	0.018	U	UJ	ISP	µg/L
460-72594-1	460-72594-6	GW0047	Perfluorodecanoic acid	0.036	0.017		J	ISP	µg/L
460-72594-1	460-72594-6	GW0047	Perfluorooctanesulfonic acid	0.042	0.026		J	ISP	µg/L
460-72594-1	460-72594-6	GW0047	Perfluoroundecanoic acid	0.029	0.017		J	ISP	µg/L
460-72785-1	460-72785-7	GW0056	Perfluorooctanesulfonic acid	0.012	0.027	U	UJ	ISP	µg/L
460-72785-1	460-72785-8	GW0057	Perfluorooctanesulfonic acid	0.012	0.027	U	UJ	ISP	µg/L
460-72976-1	460-72976-6	GW0061	Perfluorononanoic acid	3.73	0.037	D	U	FB	µg/L
460-72976-1	460-72976-7	GW0062	Perfluorononanoic acid	3.88	0.038	D	U	FB	µg/L
460-72976-1	460-72976-7	GW0062	Perfluorooctanoic acid	0.37	0.019		J	MS	µg/L
460-72976-1	460-72976-8	GW0063	Perfluorononanoic acid	3.83	0.038	D	U	FB	µg/L
460-72976-1	460-72976-8	GW0063	Perfluorooctanesulfonic acid	0.017	0.028	J	J	ISP	µg/L

Notes:
DV = data validation
FB = field blank contamination
ISP = internal standard performance
MB = laboratory blank contamination
MS = matrix spike recovery
SSR = surrogate spike recovery
UC = upper calibration range exceeded

B = compound was found in the blank and sample.
D = sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples.
J = the associated numerical value is an estimated quantity.
U = the material was analyzed for, but was not detected. The associated numerical value is the sample quantitation limit.
UJ = estimated and not detected. The analyte is considered to be not detected at the reported value, and the associated numerical value is an estimated value.